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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,523	04/01/2004	Jani Hamalainen	59864.01276	9893
32294	7590	10/18/2007	EXAMINER	
SQUIRE, SANDERS & DEMPSEY L.L.P.			RICE, ELISA M	
14TH FLOOR			ART UNIT	PAPER NUMBER
8000 TOWERS CRESCENT			2624	
TYSONS CORNER, VA 22182			MAIL DATE	DELIVERY MODE
			10/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/816,523	HAMALAINEN, JANI
	Examiner Elisa M. Rice	Art Unit 2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11 July 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 17 and 18 is/are allowed.
- 6) Claim(s) 1-9, 11-15, 19 and 20 is/are rejected.
- 7) Claim(s) 10 and 16 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

1. This office action is responsive to applicant's remarks received on July 11, 2007.

Claims 1-20 are pending.

Response to Amendment

2. In response to the amendment of the specification and claims, the objections to the specification and claims have been withdrawn. In response to the filing of the terminal disclaimer, the obviousness-type double patenting rejection is withdrawn. As per the Applicant, claims 1,6-7,10-14, 16, and 17 are amended to more particularly point and distinctly claim the subject matter of the present invention and to correct informalities. As the nature of Applicant's amendments does not change the scope of the invention, the Office Action is made final.

Claim Rejections – 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 2, 3, 5, 6, 7, 8, 9, 11 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui et. al (JP404242106A – a translation is on order and will be provided with the mailing of the next office action) in view of Mack et al. (US patent 6,377,700), Teitelbaum (US 5,872,834) and Picone et. al. (US 5,293,452).

Regarding claim 1, Usui discloses a face recognizing apparatus ("To provide a face recognizing apparatus by which the recognizing rate is further improved", Abstract) comprising:

at least one camera directed toward the user's face (Usui, Figure 2, numeral 112);
memory means for storing user profile information relating to authorized users of a system (Usui, Figure 1, numeral 17);

processing means connected to said at least one camera for processing the still images obtained by said at least one camera (Figure 1, numeral 13) and generating a 3-dimensional model of the user's face (Usui, Figure 2, numeral 15, see Figures 3, 5-7), and

processing means for comparing the generated model with the stored user profile information to determine the user (Figure 1, numeral 16).

Usui does not teach (underlined):

- (1) at least one camera adapted to record at least two still images of the user from at least first and second angles of view;
- (2) a mobile hand held terminal for recognizing a user's identity during an attempt to access the mobile terminal;
- (3) processing means for comparing the generated model with the stored user profile information to determine whether the user is authorized to access a system, said processing means comprising means for granting access to the system when the generated model matches the profile information of one of the authorized users stored in the memory means, thereby indicating recognition and authorization of the user; and
- (4) means for updating the profile information of the one of the authorized users with the generated model after each grant of access by said means for granting access such that the updated profile information comprises an average of the generated model and the previously stored profile information.

Mack discloses a method and apparatus for capturing stereoscopic images using image sensors ("The present invention relates generally to three-dimensional (3-D) models and, in particular, to a method and apparatus for capturing stereoscopic images to be processed into 3-D models of objects.", column 1, line 8) wherein at least two cameras are directed toward the user's face and adapted to record at least two still images of the user from at least first and second angles of view (Mack, Figure 2, numeral 22 and 23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize, as the image 3D image capture system of Usui, the plural camera system of Mack whereby at least two still images of the user's face are recorded from first and second angles, in order to provide a well known, robust and reliable way with which to capture three dimensional points for modeling an object ("In creating three-dimensional (3-D) models of real objects, a multitude of images of real objects are taken from different positions to exploit the differences in the objects' projection." Mack, column 2, line 40) and without specialized equipment and operating expertise ("by using a 3-D imaging device system that can capture images of objects which are subsequently used to create 3-D data would allow consumers without special expertise to generate 3-D models of real objects expeditiously and with ease" as stated by Mack in column 1, line 52).

While the combination between Usui and Mack discloses the invention above, the combination does not teach

(2) a mobile hand held terminal for recognizing a user's identity during an attempt to access the mobile terminal;

(3) processing means for comparing the generated model with the stored user profile information to determine whether the user is authorized to access a system, said processing means comprising means for granting access to the system when the generated model matches the profile information of one of the authorized users stored in the memory means, thereby indicating recognition and authorization of the user; and

(4) means for updating the profile information of the one of the authorized users with the generated model after each grant of access by said means for granting access such that the updated profile information comprises an average of the generated model and the previously stored profile information.

Teitelbaum discloses a telephone with biometric sensing device ("This invention relates generally to telephones and more particularly to a telephone provided with a contact imaging device for identifying an operator of the telephone.", column 1, line 6) comprising:

(1) a mobile hand held terminal for recognizing a user's identity during an attempt to access the mobile terminal ("the contact imaging device allows for a user of the telephone to be identified", column 4, line 14);

(2) processing means for comparing the generated model with the stored user profile information to determine whether the user is authorized to access a system ("The comparator means analyzes the biometric data for identifiable features and compares predetermined features against those of biometric templates stored in non-volatile memory.", Teitelbaum, column 11, line 35), said processing means comprising means for granting access to the system when the generated model matches the profile information of one of the authorized users stored in the memory means, thereby indicating recognition and authorization of the user ("Once identified, the salesman is provided access to telephone features and services in a predetermined manner.", Teitelbaum, column 8, line 50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the three dimensional modeling and biometric (i.e., facial) biometric system of the Usui and Mack combination described above, into the mobile hand held terminal of Teitelbaum to determine whether the user is authorized to access a system, in order to provide Teitelbaum with a contact free method of capturing a biometric (i.e., a face instead of a fingerprint) for the convenience of the user, and to ensure accuracy of recognition ("recognizing rate is further improved" at Usui, abstract).

While the combination between Usui, Mack, and Teitelbaum disclose the invention above, the combination does not teach a means for updating the profile information of the one of the authorized users with the generated model after each grant of access by said means for granting access such that the updated profile information comprises an average of the generated model and the previously stored profile information.

Picone discloses a voice log-in using spoken name input ("This invention is a voice log-in technique in which access to, for example, a medical records database, is granted based on the computerized recognition of a person's spoken name.", column 2, line 24) that teaches a means for updating the profile information of the one of the authorized users with the generated model after each grant of access by said means for granting access such that the updated profile information comprises an average of the generated model and the previously stored profile information ("For each successful verification, the dynamic reference updating procedure averages the feature sets

associated with the reference template and the input speech, and the reference template is updated accordingly," Picone, column 2, line 1)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a means for updating the profile information of the one of the authorized users with the generated model after each grant of access by said means for granting access such that the updated profile information comprises an average of the generated model and the previously stored profile information as taught by Picone to the combination of Usui, Mack, and Teitelbaum in order to accommodate gradual changes in appearance and maintain recognition over a long time period ("thereby accommodating changes.", Picone, column 2, line 5)

Regarding claim 2, Mack further comprises a light source for projecting light at the user's face (Mack, Figure 4, numeral 41).

Regarding claim 3, Mack further teaches a light source wherein the light source projects structured light onto the user's face to facilitate the generation of the 3-dimensional model (Mack, Figure 4, numeral 42).

Regarding claim 5, Usui further teaches said memory means comprising at least one selected from a group consisting of RAM, ROM, EPROM, and a magnetic storage

media, which would be an inherent feature of the database used to store existing user profiles depicted in Usui's drawings (Usui, Figure 1, numeral 17).

Regarding claim 6, Usui teaches a processing means comprising a computer, said memory means being contained within said computer (Usui, Figure 2, numeral 114).

Regarding claim 7, while the combination between Usui, Mack, Teitelbaum, and Picone as applied to claim 1 does teach at least one camera adapted to obtain a 2-dimensional still image of the user's face and a 3-dimensional model to determine whether the user is authorized to access the system, the combination does not teach wherein the obtained 2-dimensional still image of the user's face is used to determine the user's facial texture, the determined facial texture being used in conjunction with the generated 3-dimensional model to determine whether the user is authorized to access the system.

Mack teaches the obtained 2-dimensional still image of the user's face being used to determine the user's facial texture.

It would have been obvious to one of ordinary skill in the art to further modify the 3-dimensional face recognition apparatus taught by the combination between Usui, Mack, Teitelbaum, and Picone to include textural face data as taught by Mack, in conjunction with the generated 3-dimensional model, to determine whether the user is authorized to access the system, because textural face data provides additional

information for comparison for the recognition system "such as physical surface properties of an object" (Mack, column 3, line 631).

Regarding claim 8, while the combination between Usui, Mack, Teitelbaum, and Picone teaches the invention of claim 1, the combination does not teach wherein said light source comprises at least one selected from a group consisting of white light, Laser light and infrared light.

Mack discloses a method and apparatus for capturing stereoscopic images using image sensors ("The present invention relates generally to three-dimensional (3-D) models and, in particular, to a method and apparatus for capturing stereoscopic images to be processed into 3-D models of objects.", column 1, line 8) that teaches wherein said light source comprises at least one selected from a group consisting of white light,

Laser light and infrared light ("Alternatively, the vertical lines 21 may be projected onto the object 20 using light source 16 such as infra-red laser or visible laser.", Mack, column 15, line 65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the infrared light as the light source as taught by Mack in the invention created by the combination of Usui, Mack, Teitelbaum, and Picone infrared light is not visible and therefore more transparent and passive for the comfort of the user ("generating non-visible light output (e.g. infra-red)" (Mack, column 5, line 57).

Regarding claim 9, the combination between Usui, Mack, Teitelbaum, and Picone, which teaches the invention of claim 1 discussed above, also teaches wherein the mobile terminal is a mobile telephone (Teitelbaum, Figure 12).

Regarding claim 11, Mack of the combination between Usui, Mack, Teitelbaum and Picone, which teaches the invention of claim 1, further comprises means for determining an orientation of the mobile terminal for determining an angle between said at least first and second angle of view (Mack, Figure 6)

Regarding claim 12, Mack of the combination between Usui, Mack, Teitelbaum, and Picone, which teaches the invention of claim 1, discloses wherein said at least one camera comprises first and second cameras, said first camera adapted to record at least one still image of the user from at least the first angle of view and said second camera adapted to record at least one still image of the user from at least the second angle of view (Mack, Figure 12)

5. **Claims 19, 4, 13, 14, and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui et. al (JP404242106A – a translation is on order and will be provided with the mailing of the next office action), Mack et al. (US patent 6,377,700) , Teitelbaum (US 5,872,834), Picone et. al. (US 5,293,452) and Sadovnik (US 5,497,430).

Regarding claims 19 and 4, Usui does not teach at least one camera comprising a charged couple device (CCD) camera, which is a digital camera.

Sadovnik discloses at least one camera comprising a charged couple device camera, which is a digital camera, in the analogous area of biometric recognition systems ("At the same time, one would like to use existing inexpensive CCD video cameras", Sadovnik, column 13, line 46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a CCD video camera, which is a digital camera, because they are relatively inexpensive ("At the same time, one would like to use existing inexpensive CCD video cameras", Sadovnik, column 13, line 46).

Regarding claims 13 and 20, the invention of claim 13 and 20 are obvious in view of Usui, Mack, Teitelbaum, Picone and Sadovnik for the same reasons and motivation as applied to claims 1, 3 and 7 above.

Regarding claim 14, Mack of the Usui, Mack, Teitelbaum, Picone, and Sadovnik combination discussed in claim 13 further comprises a light source for projecting structured light on the user's face for use in obtaining said at least two still images of the user's face (Mack, Figure 6, numeral 30 and 32).

Regarding claim 15, Teitelbaum of the Usui, Mack, Teitelbaum, Picone, and Sadovnik combination discussed in claim 13, teaches wherein said mobile terminal is a mobile telephone (Teitelbaum, Figure 12).

Allowable Subject Matter

7. Claims 17 and 18 are allowed. Regarding claims 17 and 18, the prior art of record does not reasonably teach or suggest the steps of sending, from a mobile terminal, 2D still images over a network to sever, generating a 3D model at the server, determining facial shape using the 3D model, sending the shape and model back to the mobile terminal, and determining whether the shape data matches a profile stored in memory.

8. Claims 10 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding claims 10 and 16, the prior art does not teach the invention of claim 1, where the mobile terminal transmits the images to a server over a network and receives a 3-dimensional model and a facial texture bit map from the server.

Response to Arguments

Summary of Applicant's Arguments:

Applicant states on the last paragraph of page 13 that "there is no indication in Usui that the 'registered data' is in fact user profile information."

Examiner's Reply:

An oral translation of the figure was obtained in which it was determined that the registered data is in fact user profile information. In fact, the "face is recognized" in the abstract by being "collated with the registered data in database 17."

Summary of Applicant's Arguments:

Applicant states in the first paragraph of page 14 that "the cited references fail to disclose or suggest at least the feature of "a processing unit connected to said at least one camera."

Examiner's Reply:

Camera 112 is part of Numeral 11, which is connected to a processing means, Numeral 13.

Summary of Applicant's Arguments:

Applicant states in the first paragraph of page 14 that "none of the figures in Usui shows that the processing means (13) is connected to the cameras 112 and 115."

Examiner's Reply:

Numeral 115 in Figure 2 is not a camera but a light projector. Camera 112 is part of numeral 11, which is connected to a processing means, numeral 13.

Summary of Applicant's Arguments:

Applicant states in the first paragraph of page 14 that "the translated portion of Usui does not indicate that reference numeral 13 processes the still images."

Examiner's Reply:

The processing unit denoted by numeral 13 processes still images as those are the only kinds of images inputted to the system from the camera.

Summary of Applicant's Arguments:

Applicant states in the last paragraph of page 14 that "to extract a number of individual elements which are picked and chosen to recreate the claimed invention, is improper absent some teaching or suggestion in the references to support their use in the particular claimed combination."

Examiner's Reply:

Applicant's argument of improper hindsight reasoning is not directed to any particular combination made by the Examiner and therefore Examiner urges Applicant to review the motivations used as part of the combination made in claim 1. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Summary of Applicant's Arguments:

Applicant states in the first paragraph of page 15 that "Teitelbaum (directed to "Telephone with Biometric Sensing Device") and Picone (directed to speech recognition) are directed references that are unrelated and otherwise, non-analogous to Usui and Mack, as well as, the present invention."

Examiner's Reply:

In response to applicant's argument that Teitelbaum and Picone are non-analogous art, it has been held that a prior art reference must either be in the field of applicant's

endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Picone is directed to the same problem solving area of updating a template with each authentication to account for changes that occur over time in a user of a system. Teitekbaum, on the other hand, is directed to the same problems solving area of determining whether a user is authorized to access a system based on whether a generated model matches the profile information of one of the authorized users.

Summary of Applicant's Arguments:

Applicant states on the third paragraph of page 16 that "the Office Action has applied five references in an effort to reconstruct Applicants' presently claimed invention."

Examiner's Reply:

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elisa M. Rice whose telephone number is (571)270-1582. The examiner can normally be reached on 8:00a.m.-5:30p.m. EST Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on (571)272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Elisa Rice *ER* 10/15/2007
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2624

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